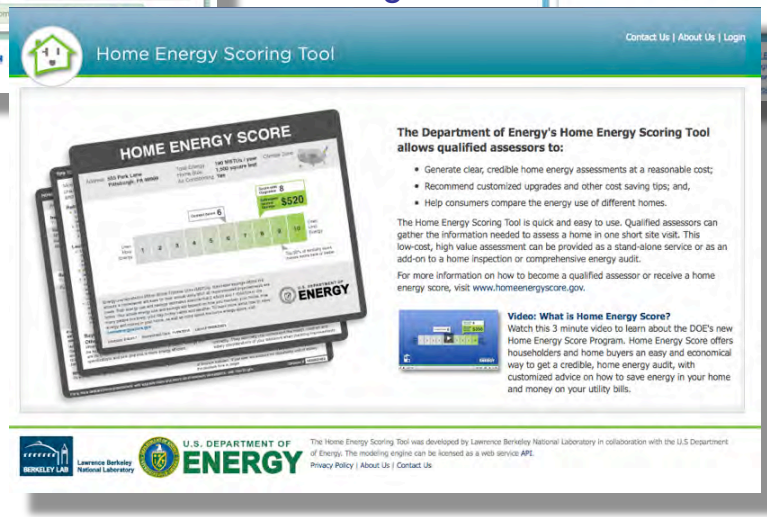
The Home Energy Saver

Web-based Energy Audit Tools & Services

Home Energy Saver - Consumer

Home Energy Saver - Pro

Home Energy Scoring Tool



Evan Mills, Ph.D. • Lawrence Berkeley National Laboratory

Lawrence Berkeley National Lab

- National Lab of the U.S. Dep't of Energy
- Founded 1931
- Managed by and located next to U.C. Berkeley
- ~500 people working on energy efficiency

“The Home Energy Saver is one of the government services that make paying taxes worthwhile.”

Nick Wilder

Homeowner

Wheat Ridge, Colorado

Home Energy Saver Mission

- *Empower users to apply state-of-the-art research & know-how to reduce home energy use and greenhouse-gas emissions*
- *Offer an experience tailored to the individual user*
- *Serve diverse user communities and building types*
- *Define and remain on cutting edge of web tool technology*
- *Ensure objectivity, accuracy, transparency*
- *Partner with the private sector for deployment*

The Home Energy Saver:

- Collects and stores home-description information.
- Computes a home's energy use, cost, and carbon footprint on-line in a matter of seconds based on state-of-the-art models and data for any location in the United States.
- Estimates the relative importance of specific end uses (heating, cooling, water heating, major appliances, small appliances, and lighting).
- Generates a list of payback-ranked energy-saving upgrade recommendations.
- Transparently documented – no "black boxes"
- Provides extensive decision-support information to help users implement the recommendations.

Key Milestones

- HES Consumer tool founded in 1994 by Evan Mills
- Home Professional tool (HESPro) launched in 2009
- Launched asset-rating tool (Home Energy Scoring Tool) in 2010
- Partnership with the National Association of Rural Electric Cooperatives (NRECA) / Touchstone adopted HES as the official calculator for their ~30 million customers
- Licensing engine to third-party software developers (starting in 2009 with Microsoft)
- R&D100 award in 2010
- Launched Social Network for home performance pros in 2010
- Expansion to multifamily and Weatherization Assistance Program applications: 2010-2013

Value of HES

- **Free:** to all users
- **High impact:** 1/3 of surveyed users say they are implementing HES recommendations
- **Best tool out there:** especially for operational analysis and customizability to individual user conditions
- **Non-proprietary:** LBNL/DOE has no commercial interest - neutral, unbiased
- **Very cost-effective:** ~$0.10 per user visit to just maintain the tool (excluding new features).
- **Huge audience:** 1 million visits per year to all the websites; 600 other websites link to it.
- **Systematically reaches diversity of users:** Consumer - Pro - Score each serve different and complimentary audiences and market-enabling purposes
- **Effective tech-transfer conduit for DOE/EERE:** official, vetted methods and data
- **Enables private sector tool developers to innovate:** they can license for a small fraction of cost it would involve to build their own (e.g. to Microsoft)
- **DOE has control:** over development priorities, content, whereas private sector tools are uncontrollable
- **Transparently documented:** assumptions, methods extensively documented on public wiki
- **The tools are "interoperable":** i.e., session information can be migrated from one to another --> internal consistency
- **Powering WAP audits:** New collaboration with ORNL will greatly improve their existing tools, and extend analysis to multifamily buildings.
- **Hosts leading social media sites:** Home Energy Pros is #1 home performance social network
- **Frequent source of media coverage for DOE:** see http://hes.lbl.gov/consumer/media-coverage
- **Longevity:** We will likely be around longer than any given private company (already16 years).

Highlights

Sponsors: DOE <*ARRA*>, EPA, CEC, HUD, CARB, Touchstone

1. First and most advanced home energy/carbon web calculator
2. Leverages tens of millions of dollars in federally-funded energy efficiency R&D to make results usable by the public (researchers use it as well)
3. Comprehensive analysis; Whole-house scope (incl. interactions)
4. DOE-2 for HVAC; RECS data for benchmarking; water heating methodology from appliance standards analysis; actual tariffs; data for other sectors developed at LBNL and elsewhere
5. Technological and behavioral variables can be set by user
6. Broad decision-support offerings (e.g. DOE tip sheets, Energy Star appliances lists, *Home Energy* magazine articles, Social Media)
7. Growing demand from private sector for web services that can be used to build derivative websites. Licensed to Microsoft.
8. 6 million visits (>100 million hits); ~1 million/year [211 countries/ territories]
9. Users from every state; 91% are homeowners or renters
10. 35% of surveyed users say implement some recommendations

Team

Founder and Project Leader - Evan Mills

CORE TEAM

Chief Engineer - Rich Brown
Senior Engineer - Norm Bourassa
Senior Engineer - Leo Rainer
Usability - Kath Straub
Research and User Support - Greg Homan
User Interface Programming - Sondra Jarvis and Vinit Jain
Graphic design and art direction - Anthony Ma, Eyespeak, and Karen Lee
Project manager - Chris Havstad

CONTRIBUTORS

Modeling

Heating/cooling simulation - Jeff Warner
Miscellaneous equipment - Marla Sanchez
Water heating - Jim Lutz
Ducts - Iain Walker
Electricity tariffs - Chris Bolduc, Richard White, Katie Coughlin

Data

Weather data - Joe Huang, Steve Konopacki, Robin Mitchell
Zip-code-to-weather-tape correlation - Jesse Cohen
Market research - Mithra Moezzi, Celina Atkinson
Utility tariffs - Hongjie Qu
Carbon emissions factors - Jon Koomey
Appliances - Peter Biermayer, Judy Lai
Infiltration - Nance Matson
Product characteristics - Celina Atkinson

Outreach

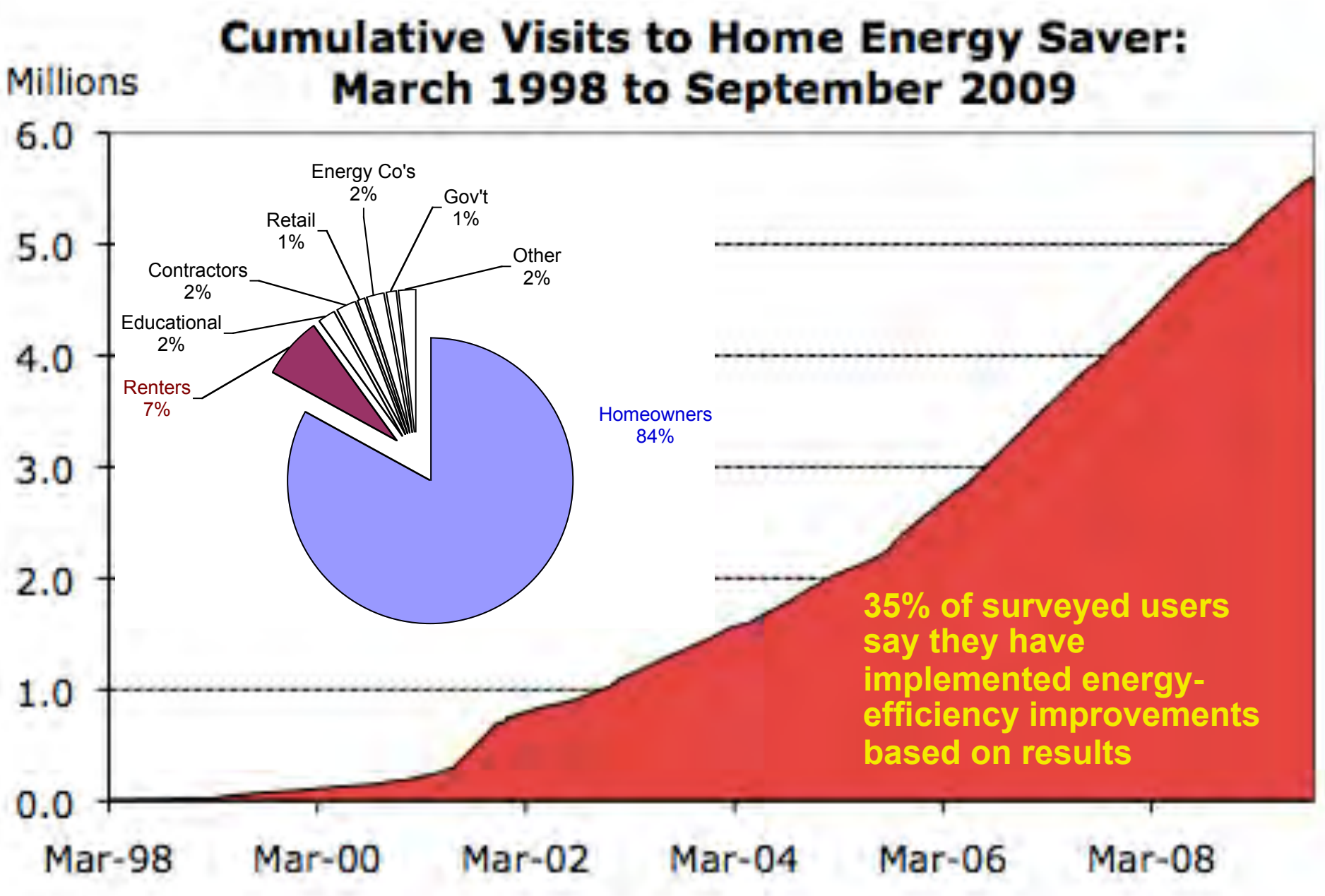
Social Media - Diane Chojnowski
Education - Rolland Otto, Mai Sue Chang, Eli Marienthal

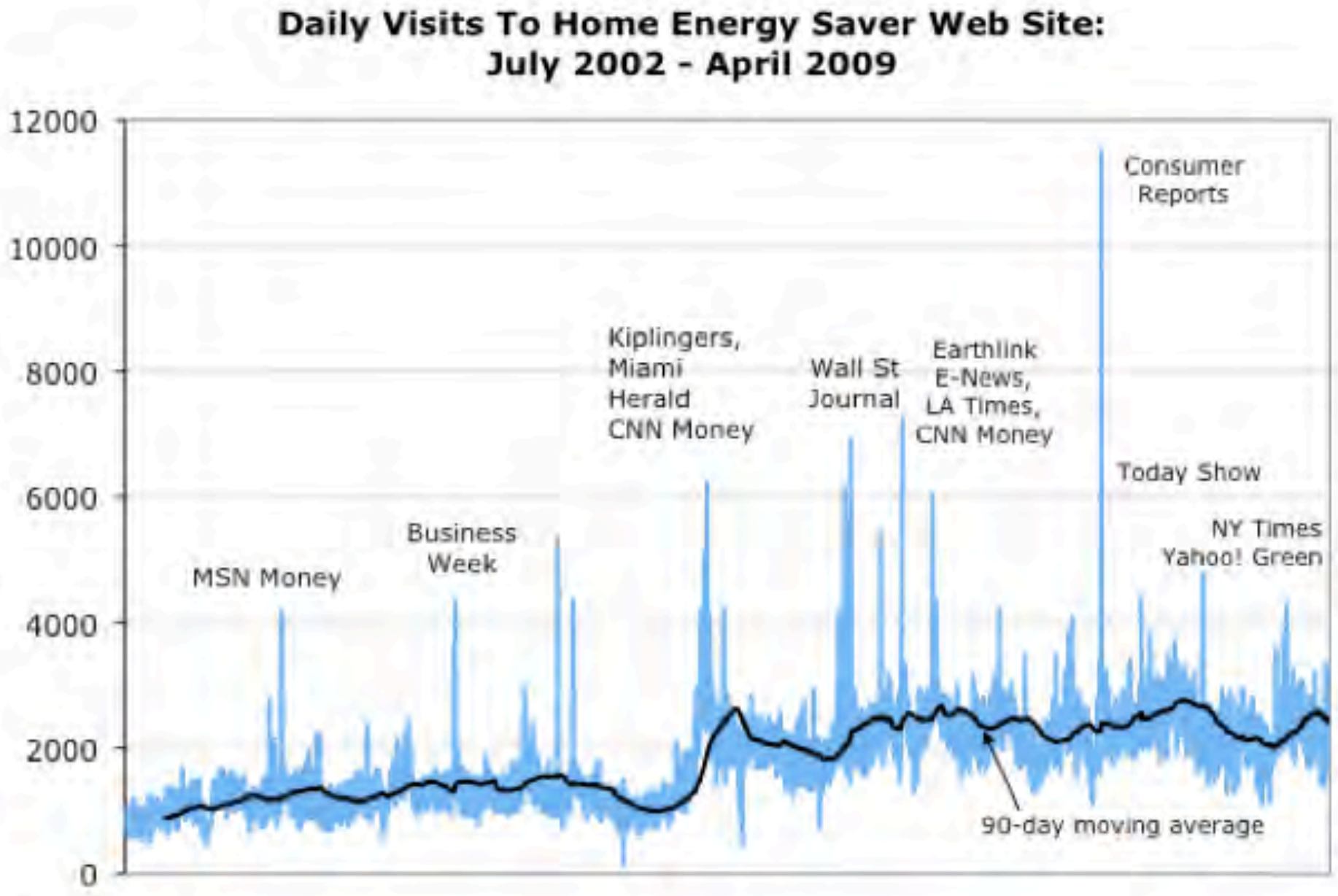
IT and Software Engineering

Web application programming - Bighead Technologies

Testing

Infosys
uTest.com


Cumulative Visits to Home Energy Saver:
March 1998 to September 2009
Millions
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Mar-98
Mar-00
Mar-02
Mar-04
Mar-06
Mar-08
Energy Co's 2%
Gov't 1%
Retail 1%
Other 2%
Contractors 2%
Educational 2%
Renters 7%
Homeowners 84%
35% of surveyed users say they have implemented energy-efficiency improvements based on results


Daily Visits To Home Energy Saver Web Site:
July 2002 - April 2009
12000
10000
8000
6000
4000
2000
0
MSN Money
Business Week
Kiplingers, Miami Herald CNN Money
Wall St Journal
Earthlink E-News, LA Times, CNN Money
Consumer Reports
Today Show
NY Times Yahoo! Green
90-day moving average

Ultra-low Investment per Visit

Cumulative HES Investment
(~$0.50 per visit)

O&M
(~$0.10 per visit)

Highly cost-effective: O&M cost is < 0.3¢/kWh-% savings...
... compared with ~10 ¢/kWh electricity purchase price

Resulting Actions to Save Energy

(N=8,284 responses as of 8/25/2008)

	Home owners	Renters
Took action to save energy based on experience at the site	33%	27%
of which: behavioral	29%	43%
of which: equipment	26%	56%
of which: both	46%	52%
Other actions (e.g. professional energy audit, called contractor, did more research)	14 %-points	8 %-points

User Feedback

Ongoing e-survey with 8300 responses thus far

- Users in *every* state (8% CA, 6% TX, 5% NY, 5% FL)
- Return Visits: 18% of users (~50% of non-households)
- Navigation: 87% say "OK" to "very easy"
- Required Input: 83% "Just Right" or "Too Simple"
- Content *vs* Calculations: Equally important!
- Will Return: 72% "yes"; 21% "undecided"
- Will Recommend: 73% "yes"; 18% "undecided"
- Implemented Efficiency Improvement based on site:
  - 33% (owners); 27% (renters)
    - 70% and 58% of the upgrades were for equipment as opposed to behavior changes

Extensive Media Coverage

Money

CNN

UTNE READER
Thinking ahead

NATIONAL GEOGRAPHIC

THE WALL STREET JOURNAL.

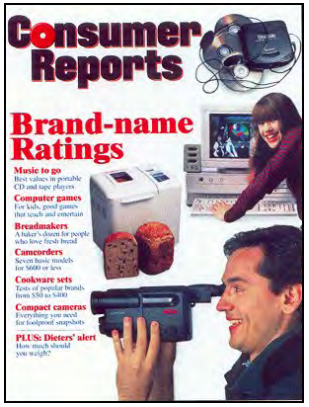
The Washington Post

The New York Times

MSNBC

PBS

cbsnews.com
CBS NEWS



Los Angeles Times

Energy Companies Linking

(partial list)

Alameda Power

Allegheny Power

Alliant Energy

American Petroleum Inst.

American Public Power Assoc

Bluestem Electric Coop (KS)

British Petroleum

Central Electric Cooperative (PA)

Central Maine Power (ME)

Central Vermont Public Service Corporation (VT)

Columbia Gas (OH)

Commonwealth Edison (IL)

Connecticut Light and Power (CT)

Consumers Energy (IA)

Detroit Edison (MI)

Dominion Resources / Virginia Power

Douglas Electric Cooperative (OR)

Duke Power (NC, SC)

United Electric Cooperative, Inc.

First Energy

Florida Power and Light

Idaho Power Newsletter (ID)

Iowa Association of Municipal Utilities

Moorhead Public Service Co.

Muscatine Power & Water

National Rural Electrical Cooperative Association

Nevada Power (NV)

PG&E (CA)

Pennyrile Rural Electric Cooperative (KY)

Phillips Petroleum

Progress Energy

Public Service Co. of New Hampshire (NH)

Rochester Public Utilities (NY)

Seattle City Light (WA)

S. Minnesota Municipal Power Authority (MN)

Tallahassee Electric Operations Department (FL)

Tideland EMC

Toledo Edison (OH)

Turlock Irrigation Dist. (CA)

Example of Utility Link

Coverage in Local Papers

(34+ states) (partial list)

AR - Searcy Daily Citizen

CA - Gilroy Dispatch

CO – Denver Rocky Mountain News

DC - Washington Post

DE - The News Journal

FL - Miami Herald

GA - Gainesville Times

IA - Quad-City Times

ID - Boise Weekly

IL – Chicago Sun Times

IN - Fort Wayne Journal Gazette

KY - Courier-Journal

MA - The Herald News

MD – Baltimore Sun

MN - Minneapolis Star Tribune

MI - Ann Arbor News

MO - St. Louis Post-Dispatch

MS - Daily Mississippian

MT – The Missoulian

NC - NC Indep. Weekly

NJ – Bergen Journal

NY – The Times Union

OH - Mount Vernon News

OK - Bartlesville Examiner

OR – The Register-Guard

PA - The Philadelphia Inquirer

SC - The State

TN - Nashville City Paper

TX - The Eagle

UT - Tooele Transcript-Bulletin

VA - Richmond Times-Dispatch

WA – The Yakima Herald Republic

WI - Oshkosh N'western

WY - Wyoming Tribune

Awards

Energy-100

Deployment to Other Tool Developers

Available free to end users. Engine now being used by public- and private-sector entities with help from LBNL to power other energy/carbon-footprint calculators.

Web Services & APIs

Microsoft® hohm™ beta

www.microsoft-hohm.com

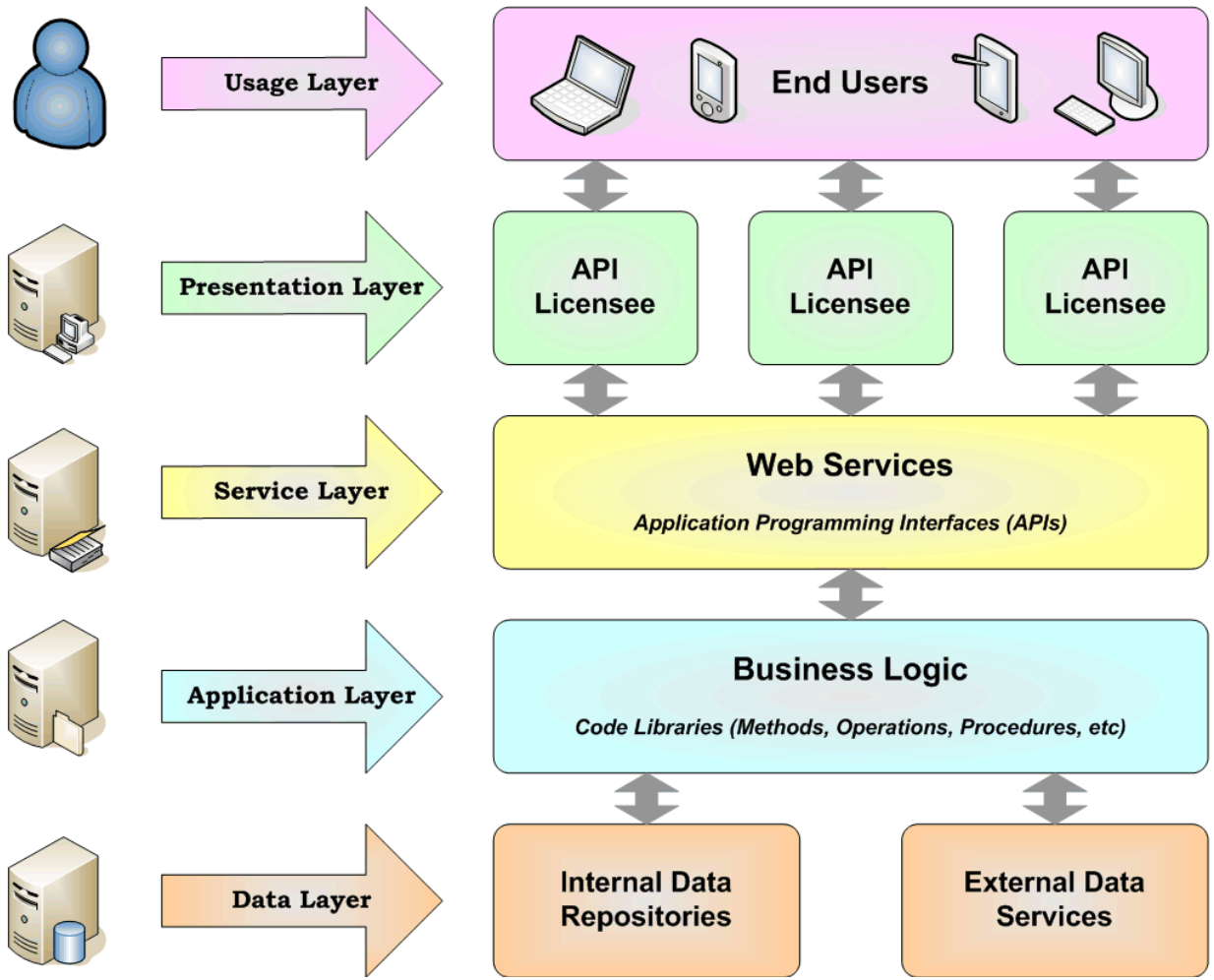
HES: Auditor & Inspector Tool

CoolCalifornia:

Home & business carbon foot-printing

CoolCalifornia.org

What the Heck is an API?



Current licensees

- Microsoft
- CNT Energy
- CSL Energy
- Voltier Creative
- Energy Datametrics
- ICF
- Ennovationz
- MNCEE
- InterNACHI
- Spirit Technologies
- NREL
- California Air Resources Board

Google maps

e.g. Hotels, Weather, Earthquakes

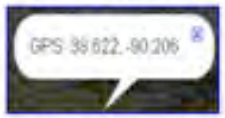
Search Google Maps Content | Add by URL

e Maps

Distance Measurement Tool

Add it to Maps

GPS Location



Add it to Maps

Position Finder

Add it to Maps

Find anything around you

Add it to Maps

Area and Distance Calculator

Add it to Maps

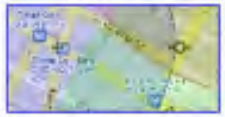
Elevation Contours

Add it to Maps

GPS Coordinates

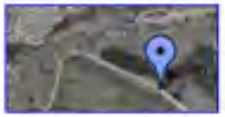
Add it to Maps

Circle Filter



Add it to Maps

Map of tourist attractions ...



Add it to Maps

Search In-between

Add it to Maps

Dig a hole through the Earth

Add it to Maps

The Weather Channel Interac...

Add it to Maps

Google Real Estate Search

Add it to Maps

Places of Interest

Add it to Maps

Earth at Night

Add it to Maps

TrafficBug

Add it to Maps

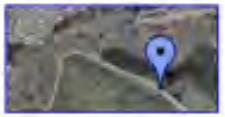
Place Finder

Add it to Maps

SpotCrime

Add it to Maps

earth

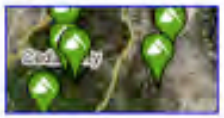


Add it to Maps

Webcams Worldwide

Add it to Maps

ActiveTrails.com



Add it to Maps

ThisHikingTrail

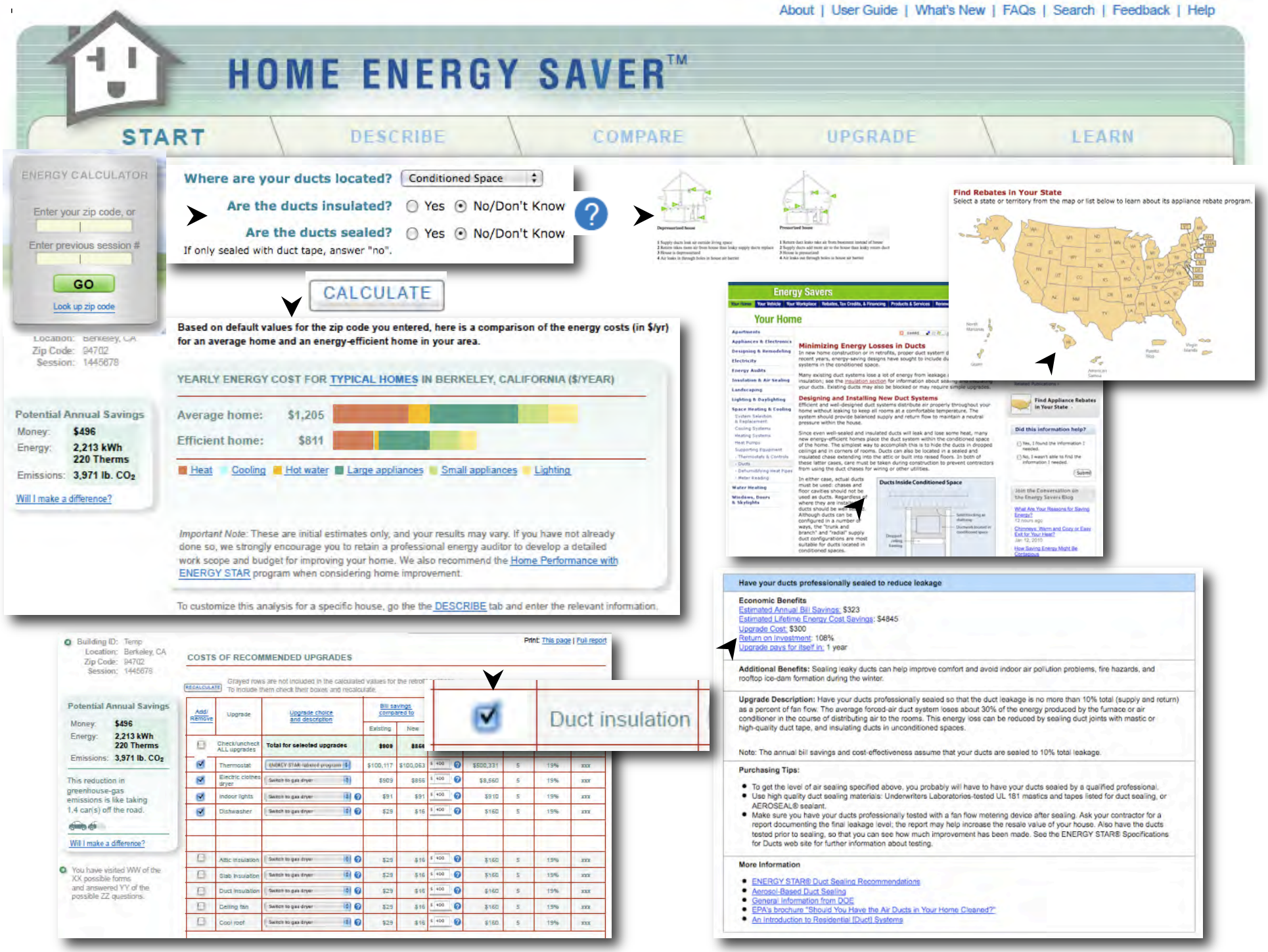
Add it to Maps

Best Nightclubs and Bars by...

Add it to Maps

AccuWeather.com Weather Sna...

Add it to Maps


About | User Guide | What's New | FAQs | Search | Feedback | Help
HOME ENERGY SAVER™
START
DESCRIBE
COMPARE
UPGRADE
LEARN
ENERGY CALCULATOR
Enter your zip code, or
Enter previous session #
GO
Look up zip code
Where are your ducts located? Conditioned Space
Are the ducts insulated? Yes No/Don't Know
Are the ducts sealed? Yes No/Don't Know
If only sealed with duct tape, answer "no".
CALCULATE
Location: Berkeley, CA
Zip Code: 94702
Session: 1445678
Potential Annual Savings
Money: $496
Energy: 2,213 kWh
220 Therms
Emissions: 3,971 lb. CO2
Will I make a difference?
Based on default values for the zip code you entered, here is a comparison of the energy costs (in $/yr) for an average home and an energy-efficient home in your area.
YEARLY ENERGY COST FOR TYPICAL HOMES IN BERKELEY, CALIFORNIA ($/YEAR)
Average home: $1,205
Efficient home: $811
Heat Cooling Hot water Large appliances Small appliances Lighting
Important Note: These are initial estimates only, and your results may vary. If you have not already done so, we strongly encourage you to retain a professional energy auditor to develop a detailed work scope and budget for improving your home. We also recommend the Home Performance with ENERGY STAR program when considering home improvement.
To customize this analysis for a specific house, go the the DESCRIBE tab and enter the relevant information.
Find Rebates in Your State
Select a state or territory from the map or list below to learn about its appliance rebate program.
Energy Savers
Your Home
Minimizing Energy Losses in Ducts
Designing and Installing New Duct Systems
Ducts Inside Conditioned Space
Find Appliance Rebates in Your State
Did this information help?
Have your ducts professionally sealed to reduce leakage
Economic Benefits
Estimated Annual Bill Savings: $323
Estimated Lifetime Energy Cost Savings: $4845
Upgrade Cost: $300
Return on Investment: 108%
Upgrade pays for itself in: 1 year
Additional Benefits: Sealing leaky ducts can help improve comfort and avoid indoor air pollution problems, fire hazards, and rooftop ice-dam formation during the winter.
Upgrade Description: Have your ducts professionally sealed so that the duct leakage is no more than 10% total (supply and return) as a percent of fan flow. The average forced-air duct system loses about 30% of the energy produced by the furnace or air conditioner in the course of distributing air to the rooms. This energy loss can be reduced by sealing duct joints with mastic or high-quality duct tape, and insulating ducts in unconditioned spaces.
Note: The annual bill savings and cost-effectiveness assume that your ducts are sealed to 10% total leakage.
Purchasing Tips:
To get the level of air sealing specified above, you probably will have to have your ducts sealed by a qualified professional.
Use high quality duct sealing materials: Underwriters Laboratories-tested UL 181 mastics and tapes listed for duct sealing, or AEROSEAL® sealant.
Make sure you have your ducts professionally tested with a fan flow metering device after sealing. Ask your contractor for a report documenting the final leakage level; the report may help increase the resale value of your house. Also have the ducts tested prior to sealing, so that you can see how much improvement has been made. See the ENERGY STAR® Specifications for Ducts web site for further information about testing.
More Information
ENERGY STAR® Duct Sealing Recommendations
Aerosol-Based Duct Sealing
General Information from DOE
EPA's brochure "Should You Have the Air Ducts in Your Home Cleaned?"
An Introduction to Residential [Duct] Systems
Print: This page | Full report
COSTS OF RECOMMENDED UPGRADES
Duct insulation

START (HES Consumer)

START (HES PRO)

HOME ENERGY SAVER™ *pro*

Energy Assessment Tool for Home Professionals

START | DESCRIBE | COMPARE | UPGRADE | LEARN

Start New Assessment

Zip Code Go Look-up Zip Code

Retrieve Assessment

Session ID# Go

Session History

	Identifier	Session Number	
☐	Mendocino, CA	2000358	[Results]
☐	Arlee, MT	2085676	
☐	Los Angeles, CA	2085678	

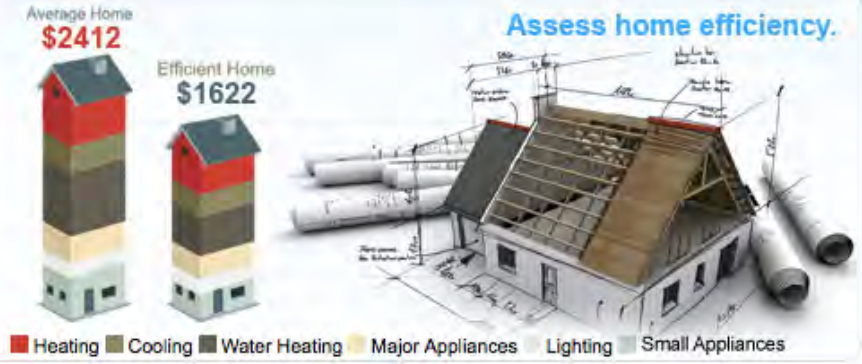
☐ Select All Duplicate OK

Home *Professional* Tool — Beta

HES*Pro* helps energy auditors, inspectors and contractors

- Calculate the energy use of a specific home/building project
- Identify strategies to improve energy efficiency
- Inspire their customers to take action

HES*Pro* is designed by Lawrence Berkeley National Laboratory and supported by the DOE, Office of Energy Efficiency and Renewable Energy. We welcome your suggestions and feedback.



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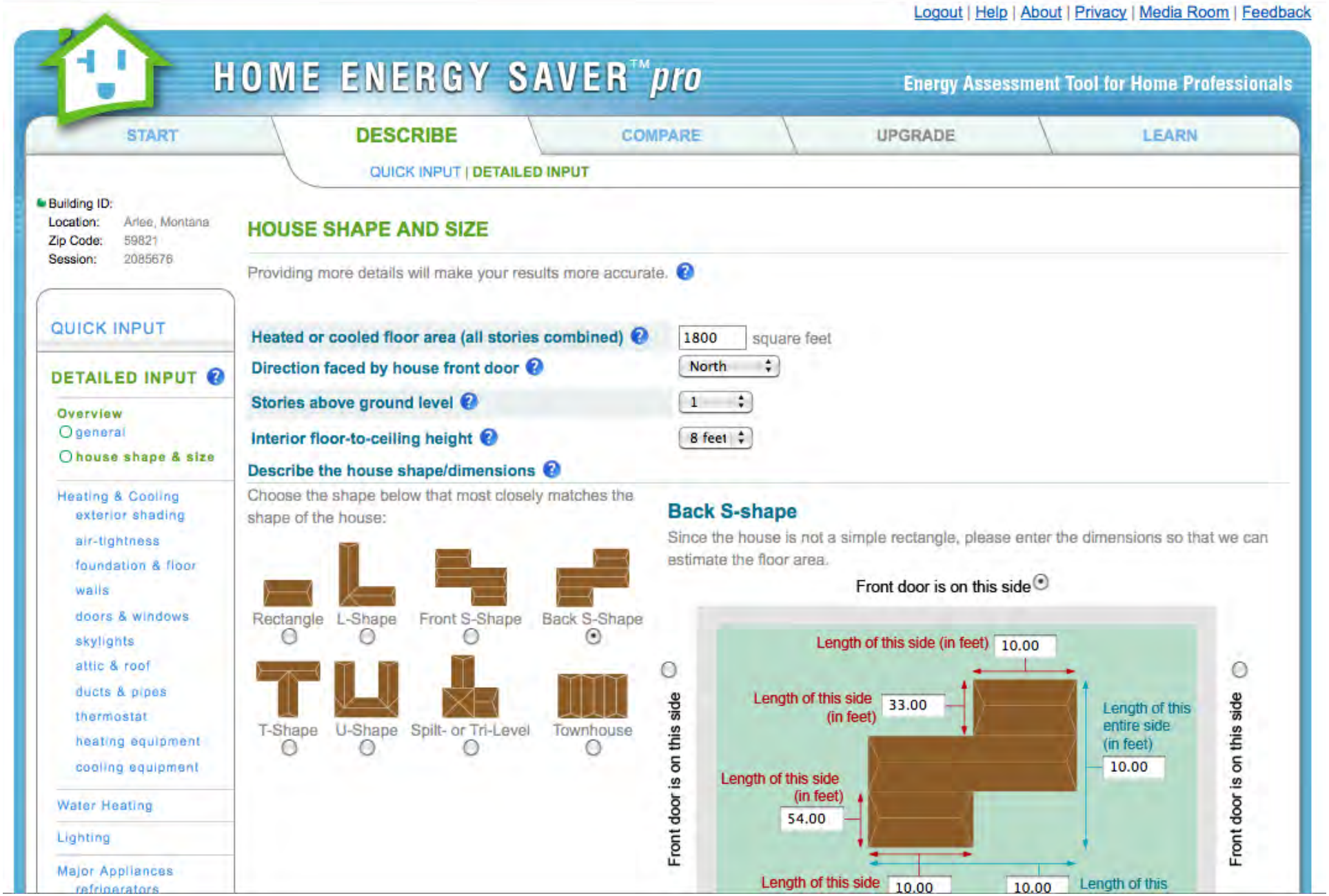
License the HES API for your projects

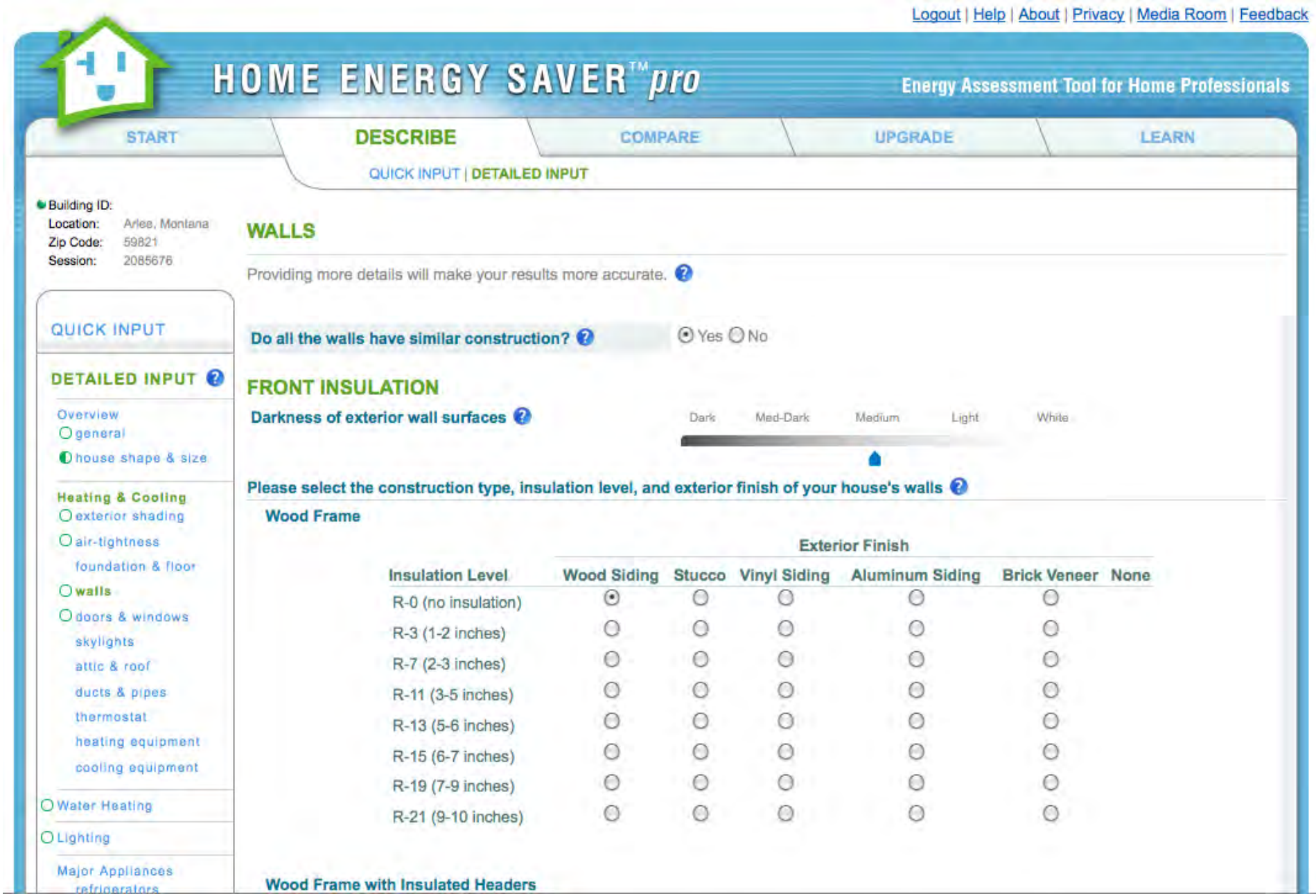
U.S. DEPARTMENT OF ENERGY

pier PATH AIR RESOURCES BOARD Infosys

DESCRIBE


Logout | Help | About | Privacy | Media Room | Feedback
HOME ENERGY SAVER™ pro
Energy Assessment Tool for Home Professionals
START
DESCRIBE
COMPARE
UPGRADE
LEARN
QUICK INPUT | DETAILED INPUT
Building ID:
Location: Arlee, Montana
Zip Code: 59821
Session: 2085676
QUICK INPUT
DETAILED INPUT
Overview
general
house shape & size
Heating & Cooling
exterior shading
air-tightness
foundation & floor
walls
doors & windows
skylights
attic & roof
ducts & pipes
thermostat
heating equipment
cooling equipment
Water Heating
Lighting
Major Appliances
refrigerators
HOUSE SHAPE AND SIZE
Providing more details will make your results more accurate.
Heated or cooled floor area (all stories combined) 1800 square feet
Direction faced by house front door North
Stories above ground level 1
Interior floor-to-ceiling height 8 feet
Describe the house shape/dimensions
Choose the shape below that most closely matches the shape of the house:
Rectangle
L-Shape
Front S-Shape
Back S-Shape
T-Shape
U-Shape
Split- or Tri-Level
Townhouse
Back S-shape
Since the house is not a simple rectangle, please enter the dimensions so that we can estimate the floor area.
Front door is on this side
Length of this side (in feet) 10.00
Length of this side (in feet) 33.00
Length of this entire side (in feet) 10.00
Length of this side (in feet) 54.00
Length of this side 10.00
10.00
Length of this
Front door is on this side
Front door is on this side

DESCRIBE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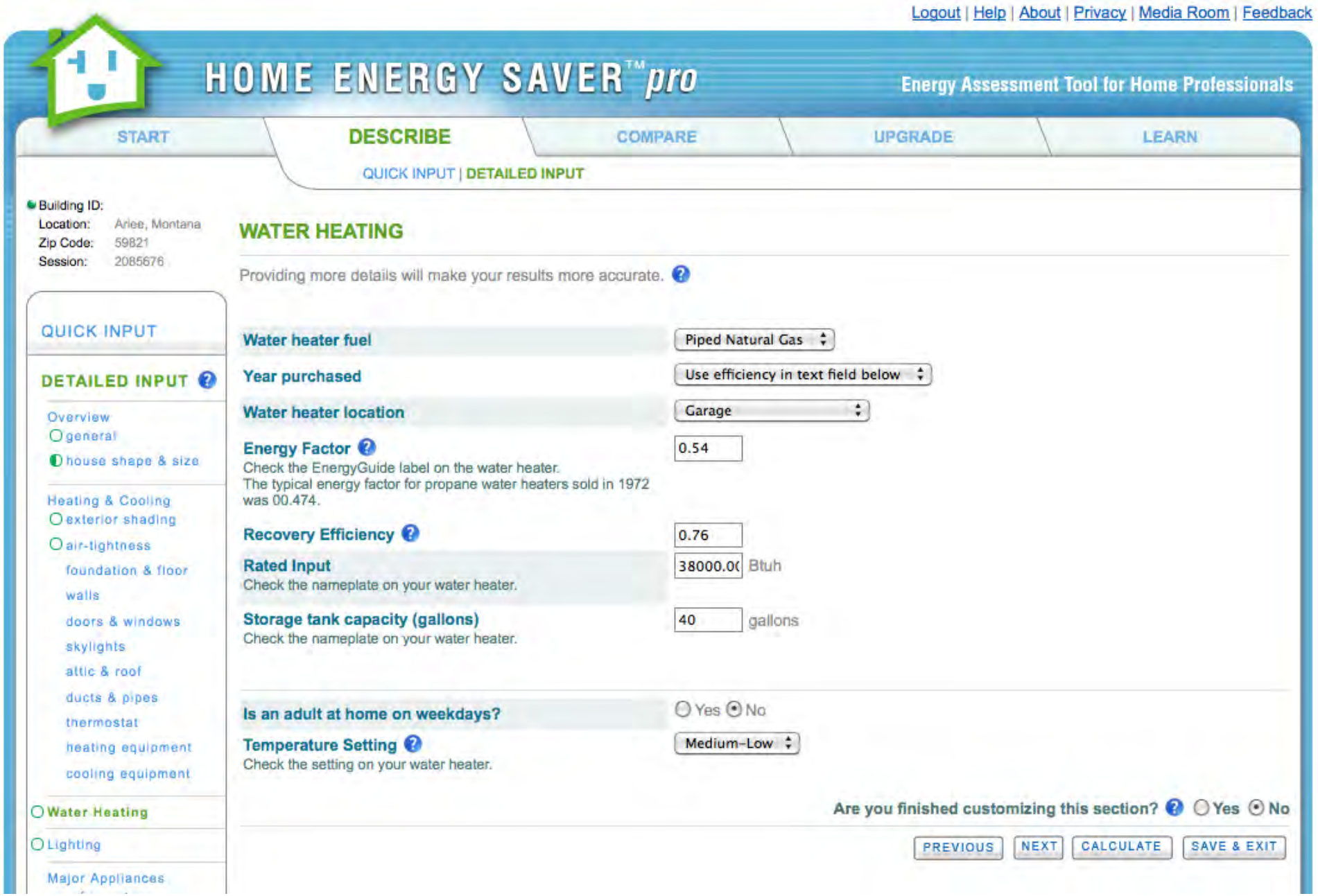
Session: 2085676
QUICK INPUT
DETAILED INPUT
Overview
general
house shape & size
Heating & Cooling
exterior shading
air-tightness
foundation & floor
walls
doors & windows
skylights
attic & roof
ducts & pipes
thermostat
heating equipment
cooling equipment
Water Heating
Lighting
Major Appliances
refrigerators
WALLS
Providing more details will make your results more accurate.
Do all the walls have similar construction? Yes No
FRONT INSULATION
Darkness of exterior wall surfaces
Dark Med-Dark Medium Light White
Please select the construction type, insulation level, and exterior finish of your house's walls
Wood Frame
Exterior Finish
Insulation Level | Wood Siding | Stucco | Vinyl Siding | Aluminum Siding | Brick Veneer | None
R-0 (no insulation)
R-3 (1-2 inches)
R-7 (2-3 inches)
R-11 (3-5 inches)
R-13 (5-6 inches)
R-15 (6-7 inches)
R-19 (7-9 inches)
R-21 (9-10 inches)
Wood Frame with Insulated Headers

DESCRIBE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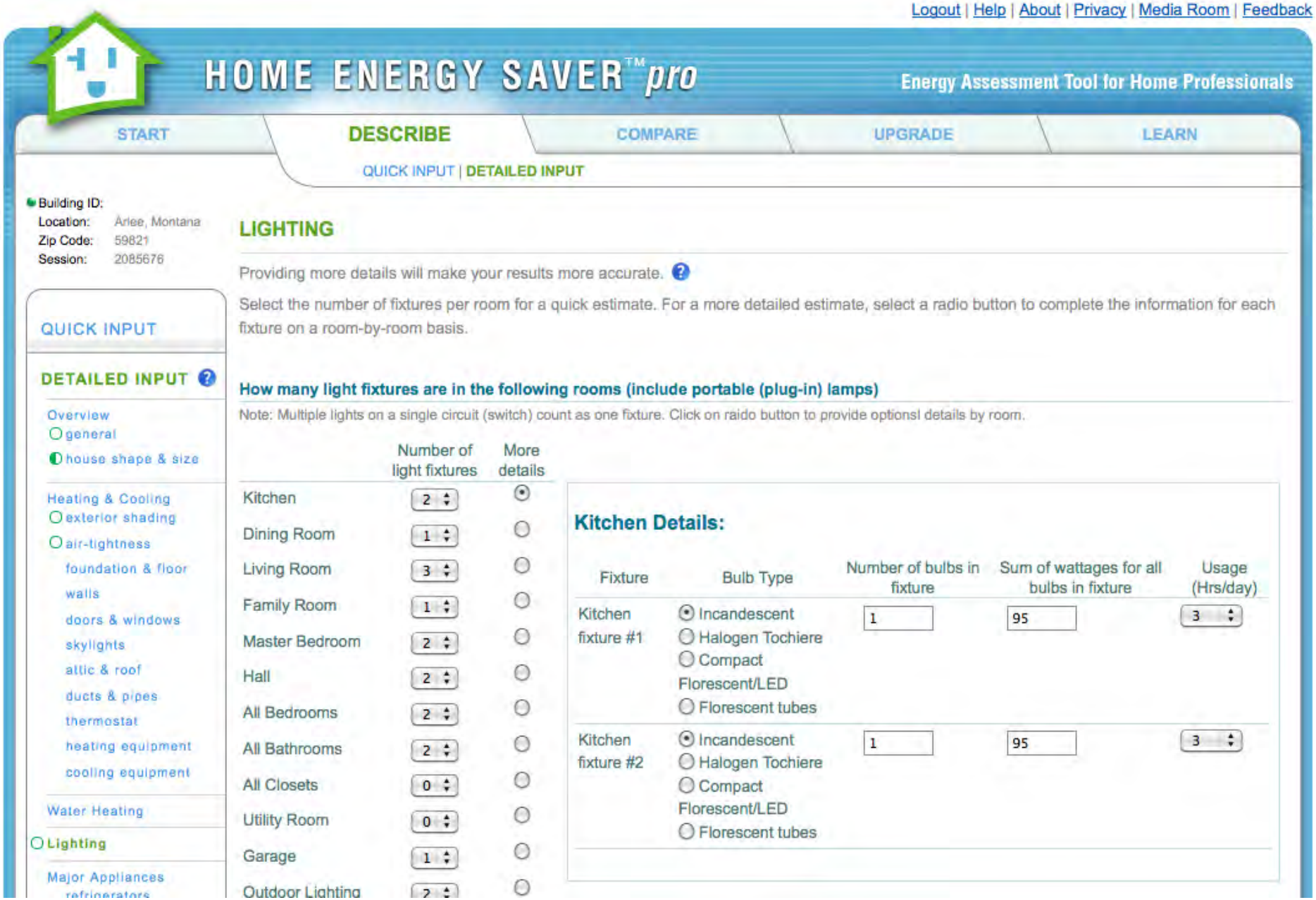
house shape & size
Heating & Cooling
exterior shading
air-tightness
foundation & floor
walls
doors & windows
skylights
attic & roof
ducts & pipes
thermostat
heating equipment
cooling equipment
Water Heating
Lighting
Major Appliances
WATER HEATING
Providing more details will make your results more accurate.
Water heater fuel
Piped Natural Gas
Year purchased
Use efficiency in text field below
Water heater location
Garage
Energy Factor
Check the EnergyGuide label on the water heater.
The typical energy factor for propane water heaters sold in 1972 was 00.474.
0.54
Recovery Efficiency
0.76
Rated Input
Check the nameplate on your water heater.
38000.0(Btuh
Storage tank capacity (gallons)
Check the nameplate on your water heater.
40 gallons
Is an adult at home on weekdays?
Yes No
Temperature Setting
Check the setting on your water heater.
Medium-Low
Are you finished customizing this section? Yes No
PREVIOUS
NEXT
CALCULATE
SAVE & EXIT

DESCRIBE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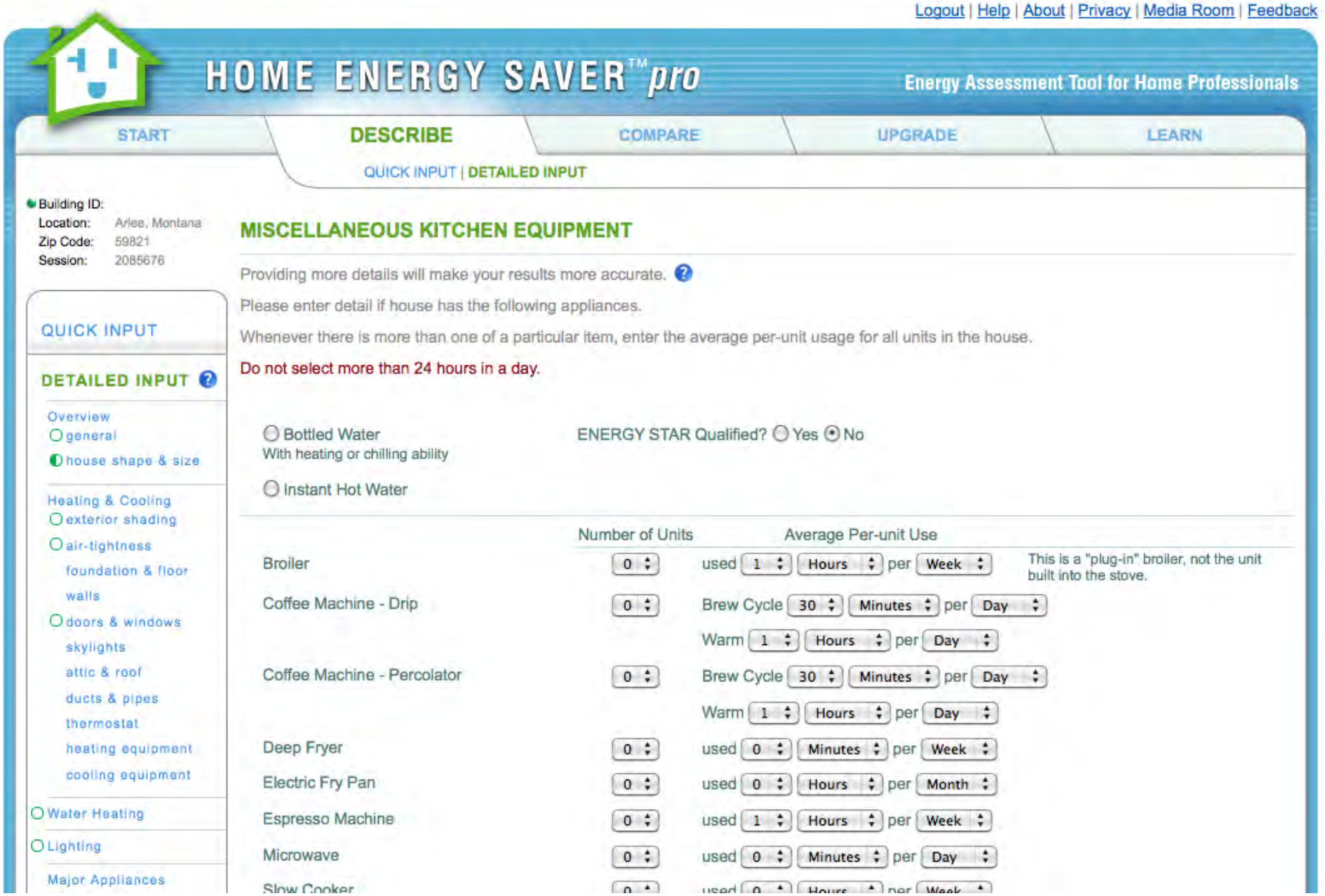
Building ID:
Location: Arlee, Montana
Zip Code: 59821
Session: 2085676
QUICK INPUT
DETAILED INPUT
Overview
general
house shape & size
Heating & Cooling
exterior shading
air-tightness
foundation & floor
walls
doors & windows
skylights
attic & roof
ducts & pipes
thermostat
heating equipment
cooling equipment
Water Heating
Lighting
Major Appliances
refrigerators
LIGHTING
Providing more details will make your results more accurate.
Select the number of fixtures per room for a quick estimate. For a more detailed estimate, select a radio button to complete the information for each fixture on a room-by-room basis.
How many light fixtures are in the following rooms (include portable (plug-in) lamps)
Note: Multiple lights on a single circuit (switch) count as one fixture. Click on raido button to provide optionsl details by room.
Number of light fixtures
More details
Kitchen 2
Dining Room 1
Living Room 3
Family Room 1
Master Bedroom 2
Hall 2
All Bedrooms 2
All Bathrooms 2
All Closets 0
Utility Room 0
Garage 1
Outdoor Lighting 2
Kitchen Details:
Fixture
Bulb Type
Number of bulbs in fixture
Sum of wattages for all bulbs in fixture
Usage (Hrs/day)
Kitchen fixture #1
Incandescent
Halogen Tochiere
Compact Florescent/LED
Florescent tubes
1
95
3
Kitchen fixture #2
Incandescent
Halogen Tochiere
Compact Florescent/LED
Florescent tubes
1
95
3

DESCRIBE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HOME ENERGY SAVER™ pro
Energy Assessment Tool for Home Professionals
START
DESCRIBE
COMPARE
UPGRADE
LEARN
QUICK INPUT | DETAILED INPUT
Building ID:
Location: Arlee, Montana
Zip Code: 59821
Session: 2085676
QUICK INPUT
DETAILED INPUT
Overview
general
house shape & size
Heating & Cooling
exterior shading
air-tightness
foundation & floor
walls
doors & windows
skylights
attic & roof
ducts & pipes
thermostat
heating equipment
cooling equipment
Water Heating
Lighting
Major Appliances
MISCELLANEOUS KITCHEN EQUIPMENT
Providing more details will make your results more accurate.
Please enter detail if house has the following appliances.
Whenever there is more than one of a particular item, enter the average per-unit usage for all units in the house.
Do not select more than 24 hours in a day.
Bottled Water
With heating or chilling ability
ENERGY STAR Qualified? Yes No
Instant Hot Water
Number of Units
Average Per-unit Use
Broiler
This is a "plug-in" broiler, not the unit built into the stove.
Coffee Machine - Drip
Brew Cycle
Warm
Coffee Machine - Percolator
Deep Fryer
Electric Fry Pan
Espresso Machine
Microwave
Slow Cooker

COMPARE

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Energy Assessment Tool for Home Professionals

START | DESCRIBE | COMPARE | UPGRADE | LEARN

SUMMARY | DETAILS | CARBON MAP

Print: This page | Report

Building ID:
Location: Arlee, Montana
Zip Code: 59821
Session: 2085676

Potential Yearly Savings

Money:	$2,261
Energy:	2790 kWh 1746 Therms
Emissions:	22916 lb. CO_2

This reduction in greenhouse-gas emissions is like taking 4 car(s) off the road.

Will I make a difference?

Existing Home Configuration

YEARLY ENERGY COSTS

Providing more details will make your results more accurate.

	Total	Heating	Cooling	Hot Water	Large Appliances	Small Appliances	Lighting
Existing Home	$3,533	$2,775	$7	$184	$436	$0	$131
With Upgrades	$1,272	$876	$7	$36	$307	$0	$46
Savings	**$2,261**	**$1,899**	**$0**	**$148**	**$129**	**$0**	**$85**

Important Note: These are initial estimates only, and results may vary. If the owner has not already done so, we strongly recommend that they retain a professional energy auditor to develop a detailed work scope and budget for improving the home. We also recommend the Home Performance with ENERGY STAR program when considering home improvements.

Comparing Results to Home's Utility Bill

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by the Environmental Energy Technologies Division
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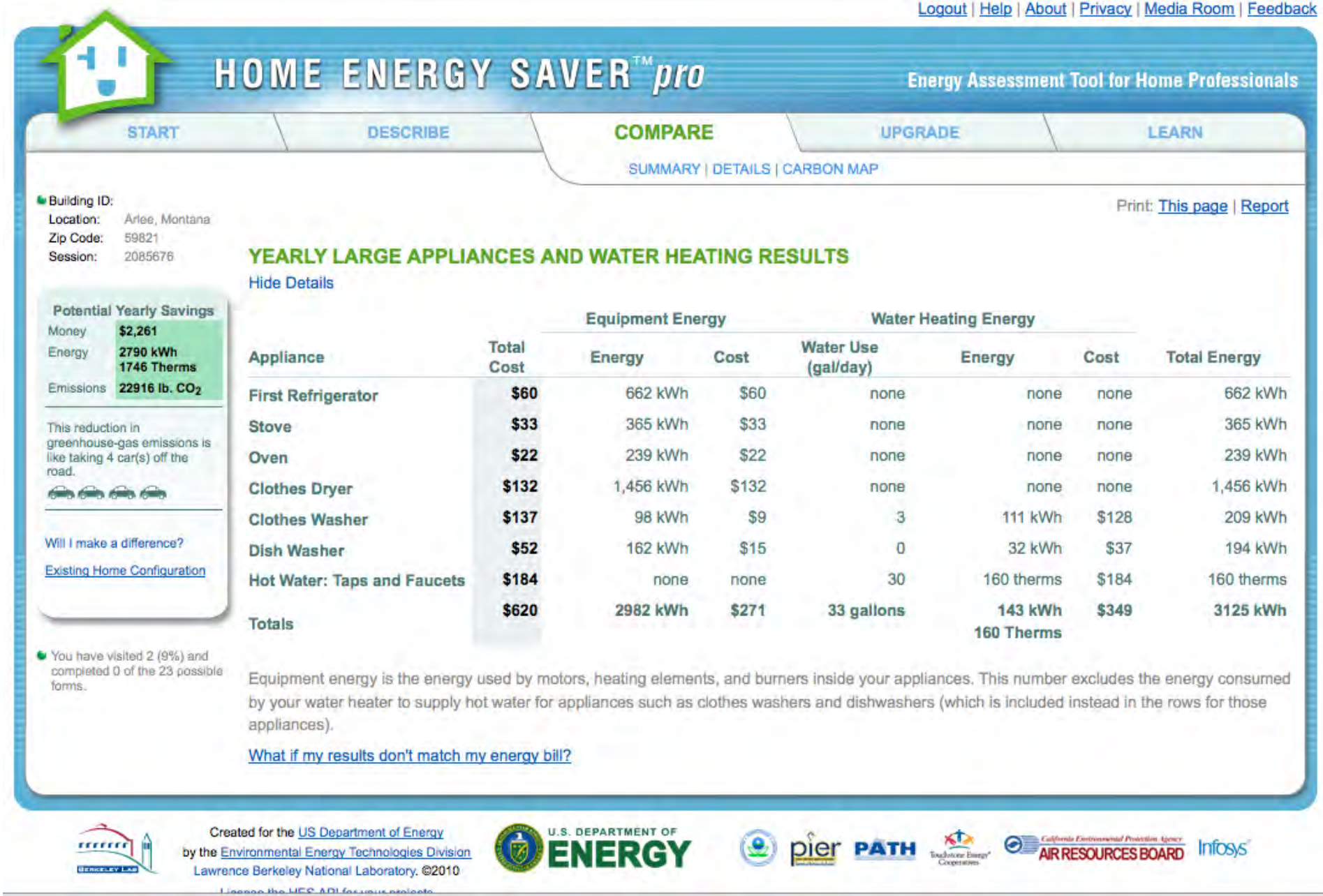
COMPARE: Drill Down



COMPARE: Drill Down

HOME ENERGY SAVER™ *pro*

Energy Assessment Tool for Home Professionals

Building ID:
Location: Arlee, Montana
Zip Code: 59821
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Will I make a difference?

Existing Home Configuration

You have visited 2 (9%) and completed 0 of the 23 possible forms.

YEARLY HEATING AND COOLING RESULTS

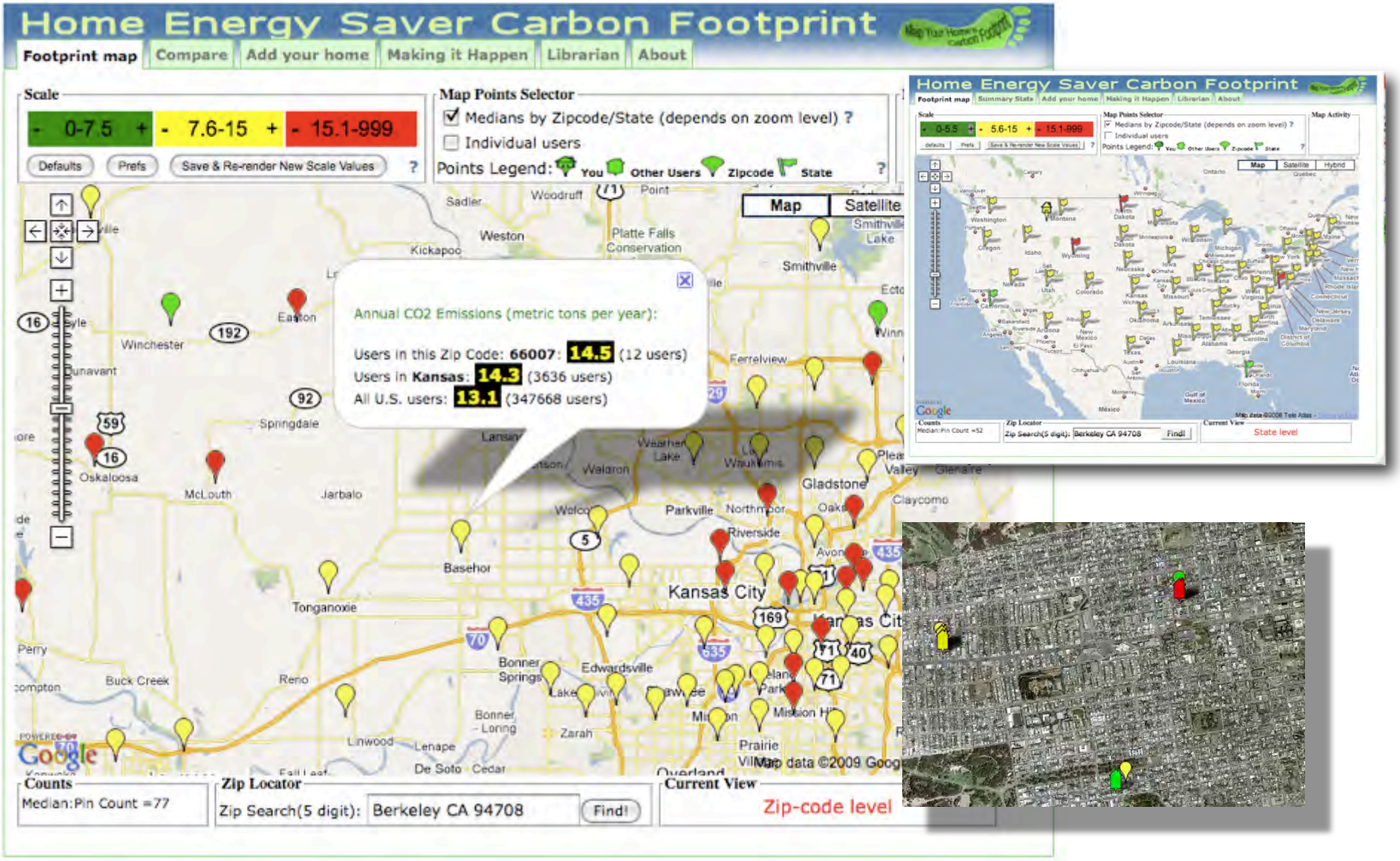
Hide Details

	Total Cost	Heating Fuel Use	Heating & Cooling Electricity Use	Air & Water Circulation Electricity Use
Cost	**$2,782**			
Heating	**$2,775**			
Central Gas furnace		$2,708	$0	$67
Cooling	**$7**			
No Cooling Equipment			$0	$0
Ceiling Fans			$7	$0

	Total Energy	Heating Fuel Use	Heating & Cooling Electricity Use	Air & Water Circulation Electricity Use
Energy Use	**2,355 therms** **808 kWh**			
Heating	**2,355 therms** **733kWh**			
Central Gas furnace		2,355 therms	0 kWh	733 kWh
Cooling	**75kWh**			
No Cooling Equipment			0 kWh	0 kWh
Ceiling Fans			75 kWh	0 kWh

BENCHMARK: Carbon footprint x ZIP

(click on pin to see details; zoom to see homes in your area)



UPGRADE

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Energy Assessment Tool for Home Professionals

START | DESCRIBE | COMPARE | **UPGRADE** | LEARN

SUMMARY | RECOMMENDATIONS | DETAILS

Print: This page | Report

Building ID:
Location: Arlee, Montana
Zip Code: 59821
Session: 2085676

Potential Yearly Savings

Money:	**$2,261**
Energy:	**2790 kWh 1746 Therms**
Emissions:	**22916 lb. CO_2**

This reduction in greenhouse-gas emissions is like taking 4 car(s) off the road.

Will I make a difference?

Existing Home Configuration

You have visited 2 (9%) and completed 0 of the 23 possible forms.

UPGRADE RECOMMENDATIONS SUMMARY

Visit 'Recommendations' to see more information on each upgrade.

	Yearly Savings	Estimated Added Cost	How Much is Too Much?	Simple Payback Time	Estimated ROI	Avoided Emissions (lbs. CO_2)
Total for recommended upgrades	**$2261**	**$8192**	**$22610**	**4**	**27%**	**22916**

Important Note: These are initial estimates only, and results may vary. If the owner has not already done so, we strongly recommend that they retain a professional energy auditor to develop a detailed work scope and budget for improving the home. We also recommend the Home Performance with ENERGY STAR program when considering home improvements.

Upgrades Requiring Investment

1. Basement wall insulation
2. Electric clothes dryer
3. Thermostat
4. Duct Sealing
5. Indoor lights
6. Wall insulation
7. Gas furnace

Other benefits that often come along with these energy-saving upgrades

- Well-insulated basement walls can make your home more comfortable and quieter, and guard against moisture problems and water pipe breakage.
- Natural gas clothes dryers reduce your home's peak load on the power grid compared to an electric dryer.
- Programmable thermostats can help keep your home more comfortable.
- Having a professional seal your home's air leaks can make your home more comfortable, reduce the risk of moisture damage, improve indoor air quality and fire

UPGRADE

HOME ENERGY SAVER™ *pro*

Energy Assessment Tool for Home Professionals

START | DESCRIBE | COMPARE | **UPGRADE** | LEARN

SUMMARY | **RECOMMENDATIONS** | DETAILS

Print: This page | Report

Building ID:
Location: Arlee, Montana
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Money:	**$2,261**
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Will I make a difference?

Existing Home Configuration

You have visited 2 (9%) and completed 0 of the 23 possible forms.

UPGRADE RECOMMENDATIONS

What efficiency level would you like to model for the initial selection of upgrades? EnergyStar

What simple payback period would you like to use for selecting upgrades? 10

RECALCULATE

Rows that are dimmed are not included in the calculated values for the retrofit package. To include them check their boxes and recalculate.

Add/ Remove	Upgrade	Upgrade Choice & Description	Yearly Savings	Estimated Added Cost	How Much is Too Much?	Simple Payback Time	Estimated Return on Investment	Avoided Emissions (lbs. CO_2)
☐	Check/Uncheck All Upgrades	**Total for Selected Upgrades:**	**$2261**	**$8192**	**$22610**	**4**	**27%**	**22916**
☑	Basement wall insulation	R-11	$530	$ 720	$5300	1	74%	5384
☑	Electric clothes dryer	Switch to gas dryer	$100	$ 160	$1000	2	62%	303
☑	Thermostat	ENERGY STAR-labeled programı	$159	$ 320	$1590	2	50%	1616
☑	Duct Sealing	Reduce leakage to 6% of total ai	$403	$ 890	$4030	2	45%	4088
☑	Indoor lights	CFLs in high-use fixtures	$46	$ 88	$460	2	44%	846
☑	Wall insulation	R-11 wall + R-5 exterior foam :	$520	$ 1196	$5200	2	43%	5278
☑	Gas furnace	AFUE=90 ENERGY STAR	$370	$ 1126	$3700	3	33%	3757
☑	Clothes washer	MEF=1.42 WF=9.5 ENERGY STA	$59	$ 180	$590	3	32%	428

UPGRADE > details

Have your ducts professionally sealed to reduce leakage

Economic Benefits:

Estimate Yearly Bill Savings:	**$403**
Estimated Lifetime Energy Savings:	**$8,060**
Estimated Added Cost:	**$890**
Maximum Price for 10 Year Payback:	**$4,030**
Return on Investment:	**45%**
Upgrade Pays for Itself in:	**2 year**

Additional Benefits:

Having a professional seal your home's air leaks can make your home more comfortable, reduce the risk of moisture damage, improve indoor air quality and fire safety, and help to prevent frozen water pipes.

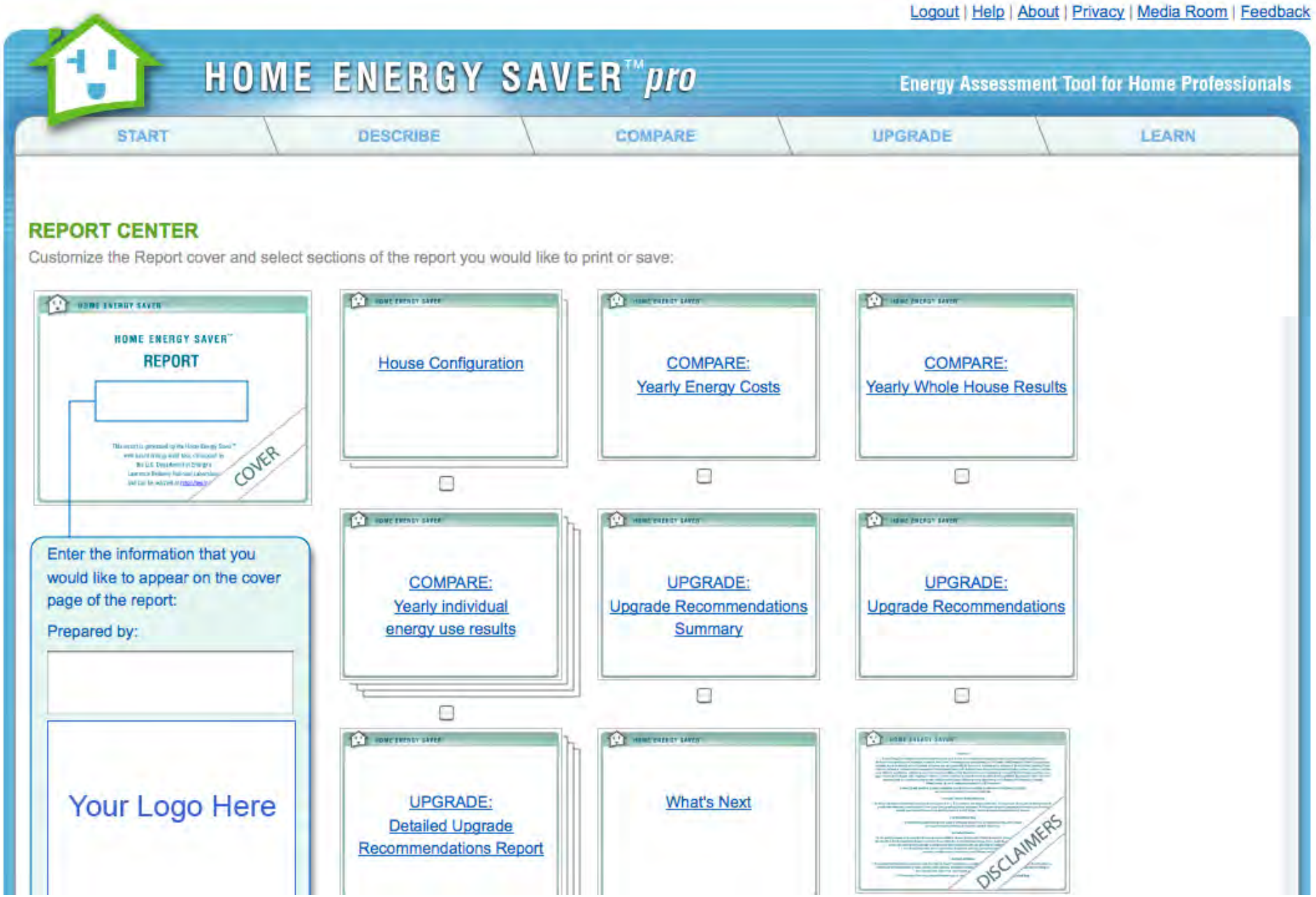
Upgrade Description:

Have a qualified professional seal your home's air leaks. Leaky houses waste energy because heated or cooled air can easily escape. Older homes tend to be leakier than newer homes. Tightening up a leaky house will reduce the heating and cooling bills. Recent advancements in air sealing technology allow specialists to go beyond the old techniques of caulking and weatherstripping around obvious places such as doors and windows. The biggest problems are usually hidden leaks in out of the way places such as attics, floors and walls, which are easily found and sealed by a specialist.Note: The annual bill savings and cost-effectiveness assume that your home's air leakage is reduced by 25%.

Purchasing Tips:

- To get the best results, hire a qualified contractor, preferably a "building performance contractor", or "energy auditor" to find out where the leaks are in your home's shell. Make sure the contractor uses a "blower door" test to find the air leaks. An infrared scan can be beneficial in addition to the blower door test. Check with your utility company; some offer no- or low-cost basic energy audits. However, the extra money you would spend to have the audit done by a home performance contractor is often well worth it. [5,6]
- Make sure your contractor tests the leakage rate after completing the sealing, not only to determine the degree of improvement, but also to ensure that the ventilation in your home is adequate. If you don't already have proper mechanical ventilation, consider installing a ventilation system. Proper home ventilation will make your home healthier and more comfortable.
- Make sure your contractor performs a combustion safety test after sealing your home's air leaks. This test checks for backdrafting and carbon monoxide, and will help assure your home is safe. [9]
- If you choose to do the work yourself, follow the guidance in ENERGY STAR's Do-It-Yourself Guide to ENERGY STAR Homesealing.

REPORT CENTER



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START | DESCRIBE | COMPARE | UPGRADE | LEARN

SMALL CHANGES MATTER | MAKING IT HAPPEN | DEEP RETROFITS | WHAT OTHERS ARE DOING | READINGS & RESOURCES

DEEP RETROFITS

- The State of the Art
- Your House as a System
- Non-Energy Benefits
- Tools of the Trade
- Hall of Shame
- Resources

TOOLS OF THE TRADE

A hammer and a saw used to be the key tools for home contractors. Today, the best-in-breed also use high-tech equipment while performing a professional energy audit or verifying that construction has been done correctly. Infrared cameras can "see" heat loss and find hidden energy savings opportunities. PFT tests or blower door tests measure a homes air leakage and tell you when sealing has been successful. Combustion monitoring equipment and indoor-air pollution detectors ensure that a heating system is not only efficient but also not dumping dangerous pollutants into the home. All of these practices should be conducted with a mind towards "whole-house system performance." Professional energy audits will bring many of these tools into play to help provide a very close look at how the house is built and operated.

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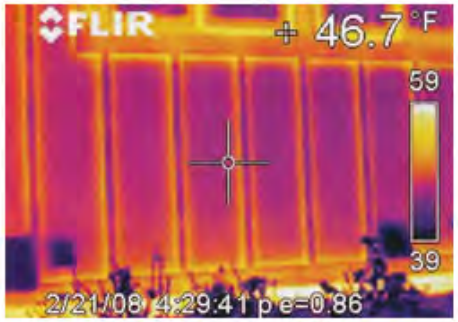
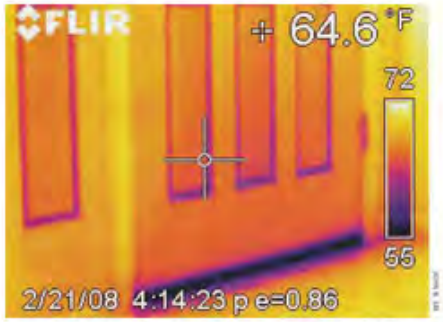
HALL OF SHAME

In this section we bring you an array of images from the field, showing the kinds of issues encountered by home performance professionals in real homes. Each tells a story of how hidden (but fixable) problems in homes can cause high energy bills.

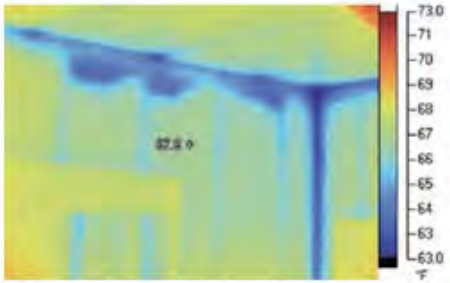
Missing wall insulation next to and below a window. Source: *Home Energy* magazine (September/October 2008)



Heat losses short-circuit through uninsulated areas where wall framing sits. Source: *Home Energy* magazine (May/June 2009)



Heat losses short-circuit a highly conductive aluminum door sill. Source: *Home Energy* magazine (May/June 2009)



Loosely installed wall insulation settles over

Absence of snow shows lack of attic

Severe rooftop ice-damming due to

LEARN: Case Studies

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SMALL CHANGES MATTER | MAKING IT HAPPEN | DEEP RETROFITS | WHAT OTHERS ARE DOING | READINGS & RESOURCES

WHAT OTHERS ARE DOING

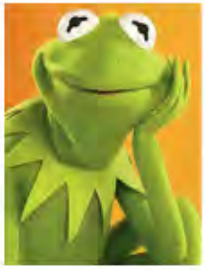
- Case-Studies
- Polls
- Put Yourself on the (Carbon) Map
- Facebook

CASE-STUDIES

Add Mine | Search by: State [Entire US] Zip code [ ] or Keyword [ ] [Search]

Results Kermit Was Right

Kermit Was Right Evan Mills, Mendocino, CA, 95460



The man

Got a rebate for my old fridge

High-efficiency dishwasher

In go the low-e, argon skylights

What I did

- ☑ No-cost changes
- ☑ Efficient lighting
- ☑ Appliance upgrades
- ☑ Heating or cooling equipment upgrades
- ☑ Air sealing
- ☑ Improved ducts

My story

It's not easy being Green. Even if you have a Ph.D. on the subject. Kermit was right, but I'm on a mission to prove him wrong.

Moving to a new home in mid-2008 presented a great opportunity to walk the talk. The late-1970s house was an eco-basket-case. To put it more positively, it offered a lot of that proverbial low-hanging fruit: ancient heating system, incandescent lighting, inefficient appliances, you get the idea . This will be like shooting fish in a barrel, I assured myself.

What better way to start than to jump on Google and see what the best products are these days? Easier said than

LEARN: Polls

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WHAT OTHERS ARE DOING

Case-Studies

Polls

Put Yourself on the (Carbon) Map

Facebook

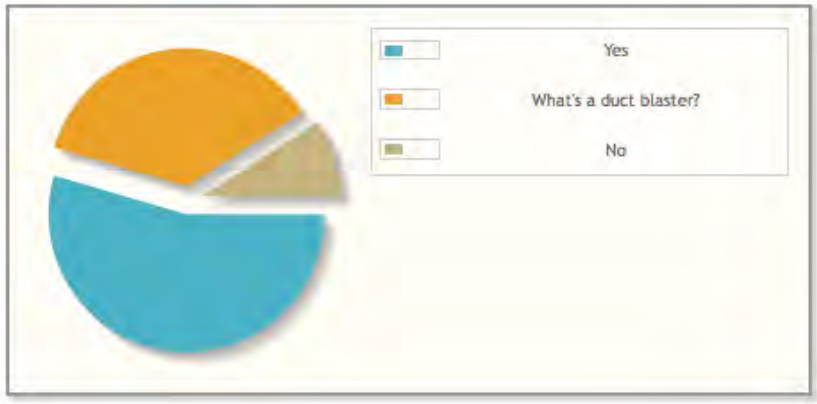
POLLS

Poll questions

- How much would your typical customer be willing to pay for an uninstrumented home energy audit?
- How do you collect data in the field during your audits?
- If you're an energy auditor or home performance contractor, do you use an IR camera?
- (•) If you're an energy auditor or home performance contractor, do you use a duct blaster?
- If you're an energy auditor or home performance contractor, do you use a blower door?

If you're an energy auditor or home performance contractor, do you use a duct blaster?

Yes	6
What's a duct blaster?	4
No	1
Total responses	11



You can still participate...

How do you compare?

If you're an energy auditor or home performance contractor, do you use a duct blaster?

- Yes
- No
- What's a duct blaster?

Asset Rating Tool

Home Energy Scoring Tool

Contact Us | About Us | Login

The Department of Energy's Home Energy Scoring Tool allows qualified assessors to:

- Generate clear, credible home energy assessments at a reasonable cost;
- Recommend customized upgrades and other cost saving tips; and,
- Help consumers compare the energy use of different homes.

The Home Energy Scoring Tool is quick and easy to use. Qualified assessors can gather the information needed to assess a home in one short site visit. This low-cost, high value assessment can be provided as a stand-alone service or as an add-on to a home inspection or comprehensive energy audit.

For more information on how to become a qualified assessor or receive a home energy score, visit www.homeenergyscore.gov.

Video: What is Home Energy Score?
Watch this 3 minute video to learn about the DOE's new Home Energy Score Program. Home Energy Score offers householders and home buyers an easy and economical way to get a credible, home energy audit, with customized advice on how to save energy in your home and money on your utility bills.

BERKELEY LAB Lawrence Berkeley National Laboratory

U.S. DEPARTMENT OF ENERGY

The Home Energy Scoring Tool was developed by Lawrence Berkeley National Laboratory in collaboration with the U.S Department of Energy. The modeling engine can be licensed as a web service API.

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Lists
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Connect with us on facebook too! http://www.facebook.com/homeenergy
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Sometimes the Smallest Appliances Are the Biggest Energy Wasters http://ht.ly/4kKPg #home #energy
5 hours ago
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@EnergyVanguard Happy Birthday Allison! Enjoy the day! @claumergiddens @energycircle
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@buckqd Here are some good tips for renters: http://ht.ly/4l0MM
6 hours ago
HESConsumer Home Energy Saver
@vcoupons @GreatTwitTips @GarryGreenLA @NormanEnviro @LakeCountyEECBG @PardeeHomes Thanks for spreading the word about energy efficiency!
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9,866 Following
9,148 Followers
439 Listed
Connections
Also followed by @OptiHome, @hywy101, @21stCentNews, and more.
You both follow @OptiHome, @hywy101, @theREmarketplac, and more.
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Profile
Find Friends
Account
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Edit Info
Edit Page
Wall
Hidden Posts
Info
Photos (1)
Polls
Twitter
Edit
About
Edit
http://hes.lbl.gov The Home Energy Saver is the web's first...See More
1,364
people like this
Likes
See All
Wall
Home Energy Saver · Most Recent
Share:
Status
Photo
Link
Video
Write something...
Home Energy Saver
Laptop computers use much less energy than desktop computers
http://ht.ly/4iC4K
Home Energy Saver
ht.ly
As you go about setting up your home office with a new computer, printer, fax machine, and maybe even a copy machine, consider that this equipment is going to add to your electricity bills. A computer alone may not use more energy than your television, but once you've put it all together, an office
12 hours ago · Like · Comment · Share
Admins (5)
See All
Use Facebook as Home Energy Saver
Promote with an Ad
View Insights
Suggest to Friends
You and Home Energy Saver
Touchstone Energy Cooperatives, Home Energy Saver Pro, San Jose Green Home & Eco Living
Quick Tips
Get more people to like your Page with Facebook Ads today!
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HOME ENERGY PROS

Connecting home energy professionals

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1170+ Members

Edit

+ Invite More View All

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Edit

Breaking light bulb myths
Posted by Elisa Wood on March 18, 2011 at 6:06am ★ Stop Featuring

Have You Adjusted Your Thinking to Green?
Posted by David Allen on March 15, 2011 at 7:30am — 2 Comments ★ Stop Featuring

Welcome to Home Energy Pros

Edit

Welcome to Home Energy Pros – the unique digital community by and for those who work in the home energy performance arena. It is no secret that we are on the cusp of a major transformation in how energy efficiency is deployed in the housing sector. More ....

Share your feedback & suggestions.

Forum

Edit

Hybrid Heat Pump Water Heater System Design Help Needed
Started by Eliron Hamburger 1 hour ago.

What area of our industry would make for a good investment?
Started by David Eggleton 1 hour ago.

Installing an indoor swim spa and what type of insulation to use.
5 Replies
Started by Elizabeth Guinn. Last reply by Greg Kruse 5 hours ago.

Lighting audits as a subset of the energy audits. 2 Replies
Started by Dennis McCarthy. Last reply by Nathan Moore 8 hours ago.

Closed cell foam on underside of my hardwood floor?
Started by ryan sentell 9 hours ago.

Where to install the vapor barrier for a finished basement? 6 Replies
Started by Jim Klebes. Last reply by Albert Schinazi 1 day ago.

How's the water? Managing energy use in Pools. 2 Replies
Started by Evan Mills. Last reply by Evan Mills Mar 20.

Enclosed Attic Insulation - Uncover or not? 6 Replies
Started by David Douglass. Last reply by Tom Lewis Mar 19.

Looking to subcontract Energy Audit's Seattle/Eastside (Manual J, Electrical Loads, Insulation etc)..Ongoing!

Evan Mills

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Settings

Quick Add...

Awaiting Approval

1 New Member

Home Energy P

Edit

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Future Directions

- Deploying at scale through web services so that third-party developers (public/private) can create user interfaces “powered” by HES
- Building engagement through Social Media communities
- Differentiating HESConsumer and HESPro offerings
- Validating against actual home data
- Mounting new technologies, modeling techniques, and interfaces

Features in the pipeline

- Improved/updated defaults
- Expanded list of retrofit measures
- New technologies and end-uses
- Multifamily modeling
- Utility bill calibration
- Behavioral variables

http://hes.lbl.gov
http://hespro.lbl.gov
http://homeenergyscore.lbl.gov

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emills@lbl.gov